

Name

Mark

Class

Date

GCSE Science / Biology

Internally Assessed Activity Unit B1a

Topic 1 – Environment

Who’s eating what?

Question 1

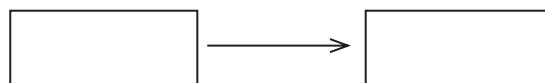
Adam and Becky have been studying ecology and food chains. They found that some wheat is made into bread and some is fed to beef cows.



Adam and Becky found some information about beef and wheat production.

They found out that one field can produce 7.5 tonnes of wheat. This can be turned into 11 500 loaves of bread or can be fed to beef cows to produce 0.3 tonnes of beef.

(a) Complete the boxes to show the food chain linking wheat with humans.



1 mark



- (b) (i) Complete the boxes to show the food chain linking wheat, humans and beef cows. Include arrows in your food chain.

2 marks

- (ii) Circle the part of the food chain that is known as the producer.

1 mark

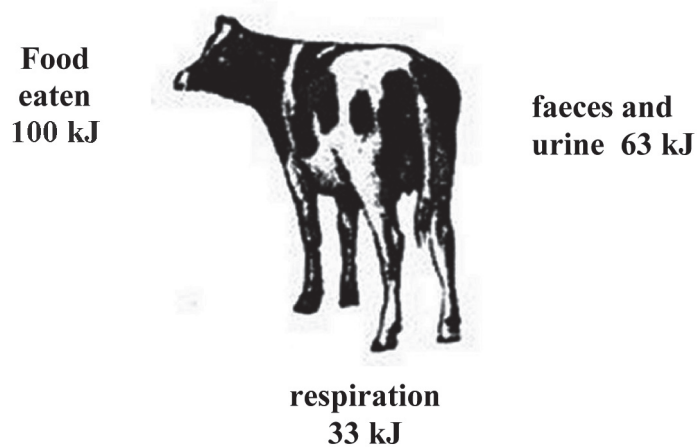
- (c) In the space below, draw the pyramid of biomass for a food chain linking wheat and beef cows.

2 marks

(6 marks)

Question 2

Adam and Becky found this picture. It shows the energy balance in a beef cow.



- (a) Calculate how much energy remains in the cow.

..... kJ
2 marks

(b)

Becky says

Energy is lost at each stage of a food chain.

Adam says

Only some of the energy from food remains in the cow.

Explain why Adam and Becky are both right in what they say.

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4 marks

(c) Humans are at the top of their food chains. Many humans eat both plants and animals.

Adam said

There would be enough food to meet the high demand if more people were vegetarians (don't eat animals).

Explain why Adam is correct.

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2 marks

(8 marks)

Question 3

The world human population is increasing and more food is needed. People are looking for ways of making human food production more cost effective in terms of energy.

The table shows how many people can be fed from the food grown in four fields of equal size.

name of food	number of people
soya beans	15
wheat	6
maize	2.5
beef	0.5

(a) Which food in the table can feed the most people?

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1 mark

(b) When comparing food production from these four fields

(i) why must the fields be of equal size?

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1 mark

(ii) give **one** other factor that would need to be taken into account.

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1 mark

(c) Use information from the table to suggest **two** ways by which human food production can be made more cost effective in terms of energy.

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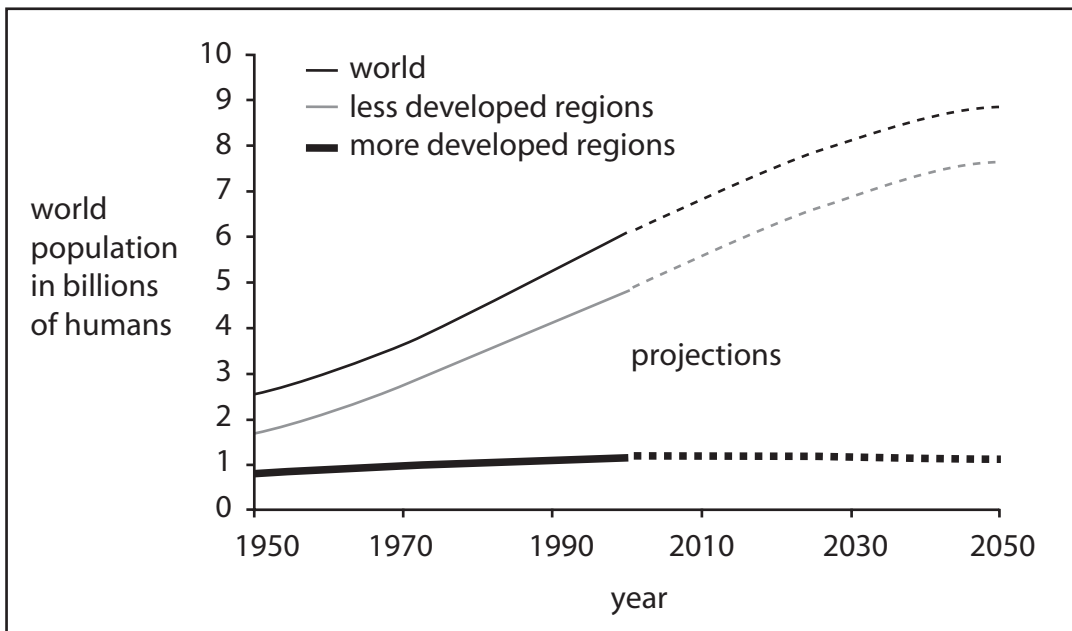
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2 marks

(d) The graph shows the world population of humans and the estimated population in the future



(Source: UN)

The dotted lines on the graph indicate that the population of humans will continue to increase.

(i) Estimate what the world population would be in 2050.

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1 mark

(ii) Show clearly on the graph how you reached your answer.

1 mark

(7 marks)

Question 4

Adam and Becky found this information about a new variety of wheat:

An Egyptian scientist has produced a drought-tolerant genetically modified wheat. He did this by transferring a gene from barley that was drought-tolerant to wheat that was not drought-tolerant. His genetically modified wheat needed much less water to produce a good crop.

He said: “Studies on its safety for human consumption and the environment must be carried out first before it can be grown as a food crop.”

- (a) Explain why studies on the genetically modified wheat’s effect on the environment must be carried out before it can be grown as a food crop.

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2 marks

- (b) Discuss how genetic modifications could make crop production more efficient.

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4 marks

(6 marks)
27 marks

Quality of written communication

/3

Total 30 marks